

Abstract

In last decades, Facial Expression Recognition from an image still becomes one of many researchers' interests. In Facial Expression Recognition, there are two main steps that play important role for the purpose of recognition, those are feature extraction, that determines image representation, and classification which classify that image into specific expression class. This TA project tries to add another step by using features selection, with Adaptive Boosting Feature Selection as its method, into facial expression recognition system which is built using Gabor Wavelet, as feature extraction method, and Support Vector Machine, as its classification method.

AdaFs selects significant features, from the pool of Gabor features, considered as unique ones, that can discriminate data of one class from other classes, without decreasing performance of the classifier. Experiments are done by implementing the k-folds cross validation in testing stage and dividing data into 3 partitions. The results of all combinations of data partitions indicate that the feature selection process can affect the accuracy of recognition systems, either increase or actually decrease its performance, depending on the exactness of selecting number of features. In addition, the using of voting methods of multiclass SVM, which are One-Against-All (OAA) and One-Against-One (OAO), also affects the accuracy of the system. From the experiments, the highest accuracy, which reached 95% accuracy level, is obtained when testing is done with the use of the third data set and the use of OAA classifier with the number of selected features is 371.

Key Words: Facial Expression Recognition, Gabor Wavelet, Features Selection, Adaptive Boosting Feature Selection, Support Vector Machine, One-Against-All, One-Against-One